**Chapter 2 Two-Dimensional Graphics**

**2.1 Pixels, Coordinates, and Colors**

**2.1.1 Pixel Coordinates**

* Row and column numbers identify a pixel, not a point.
* It is not possible to make part of a pixel black and part of it white. When you try to draw a line with black and white pixels only,the result is a jagged staircase effect. This effect is an example of something called “aliasing.”
* Aliasing can also be seen in the outlines of characters drawn on the screen and in diagonal or curved boundaries between any two regions of different color. (The term aliasing likely comes from the fact that ideal images are naturally described in real-number coordinates. When you try to represent the image using pixels, many real-number coordinates will map to the same integer pixel coordinates; they can all be considered as different names or “aliases” for the same pixel.)
* Antialiasing is a term for techniques that are designed to mitigate the effects of aliasing.
* The idea is that when a pixel is only partially covered by a shape, the color of the pixel should be a mixture of the color of the shape and the color of the background. When drawing a black line on a white background, the color of a partially covered pixel would be gray, with the shade of gray depending on the fraction of the pixel that is covered by the line.